

### **ABSTRACT OF THE DISCLOSURE**

In a method and apparatus for classifying plaque in a blood vessel of a living subject using magnetic resonance imaging, a first magnetic resonance image is produced with a first intensity distribution of a cross-section of a vessel containing plaque, and a contrast agent is injected into the vascular system and a second magnetic resonance image of the cross-section of the vessel is produced with a second intensity distribution after a first time duration following the contrast agent injection, and a third magnetic resonance image of the cross-section of the vessel is produced with a third intensity distribution after a second time duration following the injection of the contrast agent, and the plaque is classified dependent on the respective intensity distributions of the magnetic resonance images.